REMARKS/ARGUMENTS

Favorable consideration of this Application as presently amended and in light of the following discussion is respectfully requested.

After entry of the foregoing Amendment, Claims 1-11 are pending in the present Application. Claims 12 and 13 are canceled without prejudice or disclaimer. As Claim 1 has been amended to incorporate canceled subject matter, the amendment of Claim 1 does not require further search and/or consideration. Likewise, the amendment to Claim 1 will place the claims in a better form for appeal. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1-6 and 9-13 stand rejected under 35 U.S.C. § 102 as being anticipated by Acero et al. (U.S. Patent No. 5,604,839, hereinafter Acero); and Claims 7 and 8 have been identified as reciting allowable subject matter.

Applicants appreciatively acknowledge the identification of allowable subject matter. However, as Applicants believe that the rejected claims likewise recite allowable subject matter, comments are presented below distinguishing these claims over the cited reference.

REJECTION UNDER 35 U.S.C. § 102

The outstanding Official Action has rejected Claims 1-6 and 9-13 under 35 U.S.C. § 102 as being anticipated by Acero. Applicant respectfully traverses the rejection.

Applicant's amended Claim 1 recites, *inter alia*, a method for recognizing speech, including:

> . . . wherein said variance normalization is performed by multiplying said speech signal, a derivative and/or a component thereof with a reduction factor being a function of said statistical evaluation data, in particular of the signal noise, and the normalization degree data, in particular of the normalization degree values (Dj) in a frequency-dependent manner, and

> wherein a reduction factor is used having the frequency-dependent form
>
> $$R = 1/(1 + (\sigma - 1) \cdot D)$$
>
> with σ denoting the temporal standard deviation of the speech signal, its derivative, a component and/or a feature thereof and D denotes the normalization degree value. (emphasis added)

Acero describes a system and associated method of improving speech recognition through front-end normalization of feature vectors. As shown in Fig. 1, a speech recognition system (10) is provided to include an input device (12), an amplifier (14) for amplifying the signal of the input device, and an analog-to-digital converter (16) for digitizing the amplified signal.[1] The digitized signal is provided to a feature extractor (20) that extracts certain features from the signal in the form of feature vectors. The feature extractor (20) breaks down the digital signal of the a/deconverter into frames of speech; and, then, extracts a feature vector from each of the frames. The feature vector extracted from each from of speech comprises cepstral vectors. The feature vector is then provided to a normalizer (22) for normalizing the vector. The normalizer is then used in conjunction with a pattern matcher (24) to compare the normalized vector to feature models stored in a database (26) for recognizing speech elements.[2]

Conversely, in an exemplary embodiment of the Applicant's invention, a speech recognition method is provided, in which an input speech signal is preprocessed in order to generate a preprocessed speech signal. The preprocessing includes performing a variance normalization on the received speech signal, which includes performing a statistical analysis of the speech signal and generating a statistical evaluation data based on the analysis. Normalization degree data is generated from the statistical evaluation data. In this manner, the variance normalization is performed in accordance with the normalization degree data based upon normalization strength having a value, or values, being 0 with respect to a given

[1] Acero at Fig. 1; column 3, lines 16-23.
[2] Acero at column 3, lines 40-55.

threshold value. The variance normalization is performed by multiplying the speech signal, a derivative and/or a component thereof with a reduction factor. The reduction factor being a function of the statistical evaluation data, in particular of the signal noise, and the normalization degree data, in particular of the normalization degree values in a frequency-dependent manner. The reduction factor has a frequency-dependent form expressed as $R = 1/(1 + (\sigma - 1) \cdot D)$ with σ denoting the temporal standard deviation of the speech signal, its derivative, a component and/or a feature thereof and D denotes the normalization degree value.

Acero merely describes improving speech recognition through front-end normalization of feature vectors (i.e., portions of speech data). More specifically, although the Official Action has cited Acero as describing Applicants' normalization procedures, Applicants note that equation (2) is a difference equation.[3] Conversely, Applicants' amended Claim 1, and former canceled Claim 13 recite variance normalization carried out by process of multiplication which is based on a reduction factor R having a form $R = 1/r$. Acero does not disclose or suggest these features as recited in amended Claim 1, or any claim depending therefrom.

Accordingly, Applicant respectfully requests that the rejection of Claims 1-6 and 9-13 under 35 U.S.C. § 102 be withdrawn.

[3] See Acero at column 4, line 21.

CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present Application, including Claims 1-11, is patently distinguished over the prior art, in condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,

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